

# One Team, One Fight

## The Department of the Air and Space Forces

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The Department of the Air Force should be renamed the Department of the Air and Space Forces, signaling a coequal status between the leads for the air and space military domains. As part of this effort, key structures under the US Space Force and the US Air Force should be realigned to fall under the Secretary of the Air Force.

In 1996, US Air Force Chief of Staff General Ronald R. Fogleman articulated a vision of “transitioning from an *air* force into an *air and space* force on an evolutionary path to a *space and air* force.”<sup>1</sup> Although the US Air Force never fully realized Fogleman’s dream, the Department of the Air Force (DAF) still can.<sup>2</sup> While the Department retains legacy air force characteristics, such as a title that does not reflect its congressional space mandate, it can accelerate its evolution into an *air and space forces* department through two deliberate actions:

(1) Rename the DAF as the Department of the Air and Space Forces (DASF) to accurately reflect its statutory responsibility for the air and space domains, deliberately communicating the Air and Space Forces’ coequal status as domain lead services within the Joint Force.

(2) Optimize DAF internal structures by realigning joint Air and Space Forces organizations from the US Air Force and US Space Force to the Office of the Secretary of the Air Force (SAF), ensuring a continued unity of effort and establishing unity of command.

### Background

Although originating as Air Force Space Command, the US Space Force required independence as only a dedicated service can properly support and advocate for spacepower within the Joint Force. *Spacepower: Doctrine for Space Forces* identifies terrestrial forces (land, naval, and air) as defined by attributes such as transit time, range, and endurance. Conversely, access windows, revisit rates, and mission lifespan govern space forces.<sup>3</sup>

The designation of the Space Force as the principal service for military operations in, from, and to the space domain signals the increasing importance of space to national se-

1. Ronald R. Fogleman and Sheila E. Widnall, *Global Engagement: A Vision for the 21st Century Air Force* (Washington, DC: US Air Force, November 1996) 9.

2. A version of this article appeared in the December 2021 issue of *Space Force Journal*.

3. John W. Raymond, *Spacepower: Doctrine for Space Forces*, Space Capstone Publication (Washington, DC: US Space Force (USSF), August 2020), 3–10.

curity.<sup>4</sup> For example, rapidly expanding space commerce, like commerce in any other domain, ultimately requires a security guarantee.<sup>5</sup>

Traditionally operating beneath geostationary orbit, military operations in the cislunar and deep space regions appear increasingly likely.<sup>6</sup> The Space Force may support orbital rescue and planetary defense missions alongside the National Aeronautics and Space Administration (NASA), while senior Space Force leaders have publicly stated Guardians may perform military human spaceflight missions within 20 years. Planetary defense operations include near-Earth object detection and the potential defense of Earth from catastrophic impact by natural objects such as asteroids.<sup>7</sup>

Although the nature of air and space as distinct domains make independent services desirable, they remain intimately linked. Secretary of the Air Force Frank Kendall stated, only the “Air and Space Forces have the ability to control the high ground . . . can project power on short notice to anywhere that it is needed . . . have the ability to confront and defeat aggression immediately, wherever it occurs . . . [and] have the ability to come to the aid of our global Allies and partners with little or no notice wherever aggression occurs.”<sup>8</sup>

The Air and Space Forces share a common operating border—the air domain ends and the space domain begins at the point atmospheric effects become negligible.<sup>9</sup> This differentiates the DAF’s Air and Space Forces from the Naval service, consisting of the US Navy and US Marine Corps under the Department of the Navy, and the US Coast Guard under the Department of Homeland Security. While the Air and Space Forces primarily operate in two different domains, the Naval service, including its land and air arms, predominantly operate in the maritime domain, encompassing the seas, coastal land regions, and adjoining airspace.<sup>10</sup>

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4. Office of the Secretary of Defense (OSD), *Functions of the Defense Department and Its Major Components*, Department of Defense Directive (DoDD) 5100.01 (Washington, DC: OSD, September 17, 2020), 38, <https://www.esd.whs.mil/>.

5. Peter Garretson, “Opinion: The First Duty of a Space Force Is to Protect Space Commerce,” *Politico*, June 21, 2019, <https://www.politico.com/>.

6. M. J. Holzinger, C. C. Chow, and P. Garretson, *A Primer on Cislunar Space*, Air Force Research Laboratory (AFRL) 2021-1271 (Dayton, OH: AFRL, May 5, 2021).

7. Abraham Mahshie, “SpOC Commander Sees Spacefaring Guardians in Future,” *Air Force Magazine*, July 23, 2021, <https://www.airforcemag.com/>.

8. Frank Kendall, “VIDEO: Kendall on the State of the Forces at AFA’s Air, Space & Cyber ’21,” *Air Force Magazine* (website), September 23, 2021, <https://www.airforcemag.com/>.

9. Chairman of the Joint Chiefs of Staff (CJCS), *Joint Air Operations*, Joint Publication (JP) 3-30 (Washington, DC: CJCS, September 17, 2021), I-1, <https://www.jcs.mil/>; and CJCS, *Space Operations*, JP 3-14 (Washington, DC: CJCS, October 26, 2020), vii, <https://www.jcs.mil/>.

10. CJCS, *Joint Maritime Operations*, JP 3-32 (Washington, DC: CJCS, September 20, 2021), x, <https://irp.fas.org/>; and Kenneth J. Braithwaite, *Advantage at Sea: Prevailing with Integrated All-Domain Naval Power* (Washington, DC: Department of the Navy, December 2020), 1.

## The Time Has Come

A name establishes the first and perhaps one of the most significant impressions of an organization's roles and missions. For 72 years, the DAF's name accurately reflected the US Air Force as the sole service with primary responsibility for the air domain. But it is now incomplete with the establishment and necessary normalization of the US Space Force as a coequal service and space as a national security domain.

Some may attempt to justify keeping space out of the DAF's title by highlighting that the Department of the Navy's name excludes the Marine Corps. While the Space Force and Marine Corps are smaller services within their respective military departments, the Marine Corps serves as an extension of the Navy's fleets and supports the maritime fight. Marine Commandant David Berger wrote, "the luxury of presumptive maritime superiority deluded us into thinking the Navy existed to support Marine operations ashore. That era was a historic anomaly, and we need to refocus on how we will fulfill our mandate to support the Fleet."<sup>11</sup>

Conversely, the Space Force was not made independent to predominantly serve as a space corps supporting atmospheric Air Force operations. Instead, the Space Force serves as the Department of Defense's principal space domain service and as an equal partner to the Air Force in its role as the principal air domain service.<sup>12</sup> The Department of the Air Force should not constrain itself to a precedent set by a different military department under a different set of circumstances.

Moreover, the Department of the Air Force is the only military department with a domain reflected in its title—one that no longer encapsulates its full range of activities as defined by law.<sup>13</sup> The last time the DAF had an opportunity to change its name to embrace space was in 1981, when Congressman Ken Kramer recognized the advancing Soviet space threat required a new focus. Kramer introduced House Resolution 5130, the *Aerospace Force Act* that would have renamed the department and service to the Department of the Aerospace Force and US Aerospace Force and granted Title 10 authorities for space operations—something that only recently occurred with the Space Force's establishment.

At the hearing, Kramer testified that

the suggestion of a name change is to stimulate thinking about the fact that our Air Force ought to be involved in both air and space in coequal roles, that too much emphasis to date has been placed on air and not enough emphasis on space. If we had an Aerospace Force as opposed to an Air Force, implicit in that name would be a recognition of the importance of space as another theater.<sup>14</sup>

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11. David H. Berger, *Commandant's Planning Guidance* (Washington, DC: US Marine Corps, July 2019), 2–5, <https://www.hqmc.marines.mil/>.

12. OSD, DoDD 5100.01, 38.

13. US Code (USC), USSF, "10 USC Ch. 908: The Space Force," <https://uscode.house.gov/>.

14. *Hearing on H.R. 5130 Aerospace Force Act before the Investigations Subcommittee of the Committee on Armed Services House of Representatives*, 97th Cong. 2nd Sess. (May 19, 1982) (9) (Statement of Congress-

In his written statement, Kramer observed that when the Air Force became independent in 1947, it only operated in the air domain. As it had now expanded into space, a name change was a logical “reflection of the new balance between air-mass and space operations.”<sup>15</sup> He also noted such a change mirrored civilian practice with aircraft manufacturers becoming aerospace corporations during the previous two decades.

Despite earning the endorsement of General James E. Hill, former commander of North American Air Defense Command and US Air Force Aerospace Defense Command, the Department of the Air Force opposed the bill: “a name change as proposed implies that space is a coequal partner with air in Air Force operations. This implication is clearly misleading . . . and might imply that the Air Force should devote less time to its other critical needs in air operations. Such an implication is untrue and militarily self-defeating.”<sup>16</sup>

The DAF’s point of opposition in 1981 provides a benchmark to measure the relative justification for renaming today with a simple question: is space a coequal partner with air in the department? Fortunately, the department itself has already provided the answer, stating in a 2020 report to Congress that it is “one department with two coequal services and service chiefs,” justifying a name that accurately reflects its composition and purpose.<sup>17</sup>

Kramer’s assessed impact of a name change holds true today. First, such a change would stimulate thinking within the department that it should be involved in both air and space in co-equal roles rather than an air-centric department with a smaller, supporting space corps. Second, a name change would communicate to domestic and international audiences alike that the space domain is increasingly important to the United States government.

The armed forces have a long history of modifying major organizations’ names to communicate an addition of roles and responsibilities or to highlight a new focus. In 1947, the Department of War, which oversaw the US Army and the semi-independent US Army Air Forces, was renamed the Department of the Army. This change occurred as the Department of the Air Force separated from the War Department, and the National Military Establishment, the predecessor to the Department of Defense, was created.<sup>18</sup> A more recent example occurred in 2018 when the US Pacific Command was renamed the US Indo-Pacific Command. This change was not made to reflect an addition to the com-

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man Ken Kramer).

15. Kramer, *Hearing on H.R. 5130*.

16. *Hearing on H.R. 5130 Aerospace Force Act before the Investigations Subcommittee of the Committee on Armed Services House of Representatives*, 97th Cong. 2nd Sess. (May 19, 1982) (36) (Statement of Edward C. Aldridge Jr., Under Secretary of the Air Force), <https://books.google.com/>.

17. Sandra Erwin, “U.S. Space Force Organizational Plan Delivered to Congress,” *SpaceNews*, February 3, 2020, <https://spacenews.com/>.

18. Steven L. Rearden, *History of the Office of the Secretary of Defense: The Formative Years 1947–1950* (Washington, DC: OSD, 1984), 34.

mand's area of responsibility but to strategically communicate the growing geopolitical importance of the Indian Ocean region.<sup>19</sup>

The civil air and space community also has a tradition of renaming to reflect an addition of space roles. In 1958 following the launch of Sputnik, the National Advisory Committee for Aeronautics (NACA) transformed from an *aeronautics* to a *space and aeronautics* agency, becoming the National Aeronautics and Space Administration.<sup>20</sup> Similarly in 1966, the Smithsonian National Air Museum's space collection grew so Congress determined it be renamed the National Air and Space Museum to communicate its true composition properly.<sup>21</sup>

## Air and Space or Aerospace

Two options could replace *air force* in departmental context: *aerospace* or *air and space*. In everyday usage, *aerospace* is often considered a synonym for *air and space*; however, its military origin and definition have deeply problematic implications for the space community. The Air Force invented the term *aerospace* in the late 1950s to stake a claim to space by declaring "air and space are not two separate media to be divided by a line and to be readily separated into two distinct categories; they are in truth a single indivisible field of operations."<sup>22</sup>

The view of a single aerospace domain, however, was dismissed by NASA, the National Security Council, and the Defense Department at large.<sup>23</sup> Despite widespread rejection, the Air Force was adamant in its belief that "air and space are a continuum—forever. . . . [That] there is space in air and air in space; it's just that the molecules further out are a long way apart."<sup>24</sup>

Aerospace power doctrine was developed by simply rebranding airpower doctrine without regard for the differing political, physical, and operational natures between air and space. But starting with Air Force Chief of Staff General Merrill A. McPeak in 1992, the aerospace construct was gradually replaced by an acknowledgment within the Air Force that air and space were distinct domains.<sup>25</sup> His successor, Fogleman, completely replaced *aerospace* with *air and space* in Air Force basic doctrine.<sup>26</sup> Although General

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19. Scott Neuman, "In Military Name Change, U.S. Pacific Command Becomes U.S. Indo-Pacific Command," National Public Radio, May 31, 2018, <https://www.npr.org/>.

20. Jim Wilson, "NASA History Overview," NASA (website), April 2, 2018, <https://www.nasa.gov/>.

21. "History," Smithsonian National Air and Space Museum (website), <https://airandspace.si.edu/>.

22. Benjamin S. Lambeth, *Mastering the Ultimate High Ground* (Santa Monica, CA: RAND Corporation, 2003), 40; and John T. Correll, "Air and Space and Aerospace," *Air Force Magazine*, October 2016.

23. Lambeth, *High Ground*, 43–50, 129.

24. Lambeth, *High Ground*, 52.

25. Peter Hays and Karl Mueller, "Going Boldly—Where? Aerospace Integration, the Space Commission, and the Air Force's Vision for Space," *Aerospace Power Journal* 15, no. 1 (Spring 2001), <https://www.airuniversity.af.edu/>; and Lambeth, *High Ground*, 43–50.

26. Correll, "Aerospace," *Air Force Magazine*.

Michael E. Ryan, the next chief of staff, led a brief attempt to resurrect aerospace integration, General John P. Jumper put a permanent end to the concept, stating aerospace

fails to give the proper respect to the culture and to the physical differences that abide between the physical environment of air and the physical environment of space. We need to make sure we respect those differences. I will talk about air and space. I will respect the fact that space is its own culture, that space has its own principles that have to be respected.<sup>27</sup>

US Allies followed the US Air Force's 2001 rejection of the aerospace construct, recognizing air and space as distinct domains. The UK Royal Air Force transitioned from air-power doctrine to air and space power doctrine in 2009, and in 2016, the Royal Canadian Air Force doctrine largely dropped its usage of aerospace.<sup>28</sup> The Royal Australian Air Force underwent a similar transformation almost a decade ago. Its 2013 edition of *AAP 1000-D: The Air Power Manual* states, "early air power theory considered aerospace to be a continuum in the vertical dimension crossing air and space. Contemporary theory considers air and space as two distinctly separate domains; however, airpower and spacepower are related."<sup>29</sup>

Other Allied air forces have begun transitioning to combined air and space forces. In 2020, the French Air Force became the French Air and Space Force to complement the establishment of the French Space Command.<sup>30</sup> Japan has stated its intent by 2023 to rename the Air Self-Defense Force to the Air and Space Self-Defense Force, while the UK Royal Air Force's Chief of the Air Staff has publicly suggested renaming the service the Royal Air and Space Force.<sup>31</sup>

Similarly, the Republic of Korea Air Force chief of staff stated in 2021 that establishing the Republic of Korea Air Force Space Center would help the service "make a leap to become the Space and Air Force."<sup>32</sup> Interestingly, US strategic competitors have instead embraced the concept of aerospace over the past decade. In 2009, the Iranian Islamic Revolutionary Guard Corps Air Force became the Islamic Revolutionary Guard Corps Aerospace

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27. John A. Tirpak, "Challenges ahead for Military Space," *Air Force Magazine*, January 2003, 26, <https://www.airforcemag.com/>.

28. Dominic Sims, *Putting Space into RAAF Aerospace Power Doctrine* (Royal Australian Air Force Base Edinburgh, Australia: Air Power Development Centre (APDC), 2008), 5–7; Canadian Forces Aerospace Warfare Centre (AWC), *Royal Canadian Air Force Doctrine*, 3rd ed. (Ottawa: AWC, 2016); and Centre for Air Power Studies, *AP 3000: British Air and Space Power Doctrine*, 4th ed. (Shrivenham, Oxfordshire, UK: Royal Air Force, 2009).

29. Geoff Brown, Australian Air Publication (AAP) 1000-D: *The Air Power Manual*, 6th ed. (Canberra, Australia: APDC, September 2013), 2, <https://airpower.airforce.gov.au/>.

30. Christina Mackenzie, "French Air Force Changes Name as It Looks to the Stars," *Defense News*, September 15, 2020, <https://www.defensenews.com/>.

31. Yuki Tatsumi and Pamela Kennedy, eds., *Key Challenges in Japan's Defense Policy* (Washington, DC: Stimson, 2020), 46; and Sophy Antrobus, "Imagining the RAF in 2040: The Chief of the Air Staff Speaks from the Future," King's College London (website), January 27, 2021, <https://www.kcl.ac.uk/>.

32. Park Si-soo, "South Korea's Air Force Opens Space Ops Center," *SpaceNews*, October 4, 2021, <https://spacenews.com/>.

Force, and in 2015, the Russian Air Force merged with the Aerospace Defense Troops to form the Russian Aerospace Forces, “prompted by a shift in the center of gravity . . . towards the aerospace sphere,” according to Russian Defense Minister Sergey Shoigu.<sup>33</sup>

## **Executing Renaming**

A transition from the Department of the Air Force to the Department of the Air and Space Forces would be seamless yet send a clear and unequivocal message that the Air Force department has transformed into the Air and Space Forces department. The DAF has a tradition of renaming air organizations when they gain significant space roles—in 1968 Air Defense Command became Aerospace Defense Command, and Fourteenth Air Force became Fourteenth Aerospace Force.<sup>34</sup> More recently, in 2003, the National Air Intelligence Center became the National Air and Space Intelligence Center (NA-SIC), while Air Force air operations centers were briefly known as air and space operations centers from the mid-2000s until 2014.<sup>35</sup>

Renaming would affect the DAF headquarters elements, Air and Space Forces awards and decorations, and joint Air and Space Forces field organizations that support both services—whether they are situated within the Air Force, Space Force, or the Office of the Secretary of the Air Force. This is not a revolution but rather marks a singular moment in the ongoing evolution of these organizations from air to air and space.

- Department of the Air Force (DAF) → Department of the Air and Space Forces (DASF)
- Secretary of the Air Force (SecAF/SAF) → Secretary of the Air and Space Forces (SecASF/SASF)
- US Air Force Academy (USAFA) → US Air and Space Forces Academy (US-ASFA/ASFA)
- Air Force Reserve Officer Training Corps (ROTC) → Air and Space Forces ROTC
- Air Force Research Laboratory (AFRL) → Air and Space Forces Research Laboratory (ASFRL)
- Air Force Cross → Air and Space Forces Cross
- Airman’s Medal → Airman and Guardian’s Medal

The Air and Space Forces should also ensure aerospace and air and space do not describe single-domain or single-service functions. For instance, the Air Force’s 2A aerospace main-

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33. Defense Intelligence Agency (DIA), *Iran Military Power: Ensuring Regime Survival and Securing Regional Dominance* (Washington DC: GPO, August 2019), 66–67, <https://www.dia.mil/>; and DIA, *Russia Military Power: Support Great Power Aspirations* (Washington DC: GPO, 2017), 58, <https://www.dia.mil/>.

34. Air Force Historical Research Agency (AFHRA), “Air Defense Command,” January 10, 2008; and AFHRA, “Fourteenth Air Force (Air Forces Strategic) (AFSPC),” March 16, 2010, <https://www.afhra.af.mil/>.

35. AFHRA, “614 Air Operations Center (AFSPC),” April 7, 2015, <https://www.afhra.af.mil/>; and AFHRA, “National Air and Space Intelligence Center (ACC),” July 9, 2019, <https://www.afhra.af.mil/>.

tenance enlisted career fields, including aerospace ground equipment and aerospace propulsion, deal almost exclusively with aircraft.<sup>36</sup> Similarly, NASIC's space functions are being separated into the Space Force's National Space Intelligence Center.<sup>37</sup> These organizations should change their names once space mission responsibility is transferred to the Space Force to distinguish primary roles and avoid unnecessary confusion.

- National Air and Space Intelligence Center (NASIC) → National Air Intelligence Center (NAIC)
- Aerospace Ground Equipment (AGE) → Aviation Ground Equipment (AGE)
- Aerospace Propulsion → Aircraft Propulsion



**Figure 1. Incorporation of space heraldry into the new post-2002 US Strategic Command emblem (top) and USAF Aerospace Defense Command emblem (bottom)**

Visual updates to departmental emblems should also complement the name change, fully emphasizing that the organization is one department with two coequal services. This follows the Joint Chiefs of Staff's recent addition of a fifth sword, representing the Space Force, to its identification badge.<sup>38</sup> As shown in fig. 1, such a heraldic change occurred

36. Air Force Personnel Center (AFPC), *Air Force Enlisted Classification Directory: The Official Guide to the Air Force Enlisted Classification Codes* (San Antonio, TX: AFPC, October 31, 2021), 116, 142, 144, <https://kansasregents.org/>.

37. Kimberly Underwood, "Space Force Prepares to Launch National Space Intelligence Center," *Signal Magazine*, April 27, 2021, <https://www.afcea.org/>.

38. Jim Garamone, "Redesigned Joint Staff Badge Reflects Addition of Newest Military Service," *Defense News*, October 4, 2021, <https://www.defense.gov/>.



before when US Air Force Air Defense Command added two polar orbits with stars representing its space forces to its shield when it became Aerospace Defense Command.

A similar change occurred in 2002 when US Space Command and US Strategic Command merged to form a new and historically distinct US Strategic Command. The new Strategic Command emblem incorporated the gauntlet clenching lightning bolts and an olive branch from the old Strategic Command, which it had, in turn, inherited from the Air Force's Strategic Air Command. The Earth, orbits, and stars were taken from US Space Command to represent its space forces.<sup>39</sup> Similarly, when the French Air Force became the French Air and Space Force, it modified its logo to include the curvature of the Earth, representing an evolution, rather than revolution, in its character.<sup>40</sup>

The Department of the Air Force's seal is ripe for change as it includes significant air symbolism but holds no representation of space.<sup>41</sup> After the path of US Strategic Command, US Air Force Aerospace Defense Command, and the French Air and Space Force, the DAF can preserve the most important elements of its airpower heritage while also incorporating space heraldry. This would serve as an identifiable representation of its transition to the Department of the Air and Space Forces and distinguish the US Air Force from the DAF.

The US Air Force is often represented by the Department of the Air Force seal in military displays and shares the DAF's crest on its flags, creating an inaccurate impression that they are the same entity. Permitting the US Air Force to follow a similar path as the US Space Force in creating its seal and modifying its flags, potentially based on the historic Hap Arnold wings design, will help correct this misconception and further connect Airmen with their heritage.

## **Realigning the Structure**

Much like its title, the DAF's structure reflects a time when it only consisted of the Air Force. The Space Force has effectively integrated itself into the department, deriving 75 percent of enabling functions from the DAF while its garrison commands are staffed largely by 8,000 Airmen placed under Space Force command.<sup>42</sup> The Space Force has also begun to split space-centric functions from the Air Force, developing plans for a Space War College and Space Command and Staff College.<sup>43</sup> But both the Air and Space

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39. "Command Emblem," US Strategic Command (website), December 2021, <https://www.stratcom.mil/>.

40. Mackenzie, "French Air Force."

41. "United States Air Force Seal," Air Force Historical Support Division (website), n.d., accessed February 14, 2022, <https://www.afhistory.af.mil/>.

42. Christopher Merian, "US Space Force Establishes New Garrisons," US Space Force Public Affairs (website), July 24, 2020, <https://www.buckley.spaceforce.mil/>; and "Air Force Materiel Command Takes On Role as Servicing Major Command for Space Force," Air Force Materiel Command Public Affairs, August 4, 2021, <https://www.spaceforce.mil/>.

43. Underwood, "Space Force Prepares"; and Meredith Roaten, "AFA NEWS: Space Force Revamping Education and Training Courses," *National Defense Magazine*, September 21, 2021, <https://www.nationaldefensemagazine.org/>.

Forces jointly share two specific mission areas: basic research and development and officer commissioning programs.

The Air Force Research Laboratory (AFRL) leads basic research and development for the Air and Space Forces, reorganizing under a “one lab, two services” construct.<sup>44</sup> This path has been identified as more beneficial than splitting off a separate Space Force Research Laboratory, as both the Air Force and Space Force share a common interest in many of the same basic technologies with artificial intelligence, materials, human performance, and information technology being specifically noted by AFRL leadership.<sup>45</sup> It also mirrors how the Department of the Navy’s Office of Naval Research supports both the Navy and Marine Corps.<sup>46</sup>

The US Air Force Academy and Air Force Reserve Officer Training Corps both commission Air and Space Forces second lieutenants. Whether Officer Training School and basic military training should remain joint or split off by service is an open question that is beyond this article’s scope.

Having established the world’s first Department of Astronautics in 1958, the Air Force Academy has been particularly vocal about also serving as the Space Force Academy, adding a space war-fighting minor and incorporating space into all aspects of the academic education and military training programs.<sup>47</sup> The Naval service also shares the same US Naval Academy and Naval ROTC programs, commissioning Navy ensigns and Marine Corps second lieutenants.<sup>48</sup>

There are benefits to keeping these institutions as joint Air and Space Forces organizations. Academy and ROTC cadets do not typically select their service and specialization until their junior year. Air Force Academy training programs such as the Cadet Space Operations squadron’s FalconSAT operations and Davis Airfield’s airmanship programs provide Academy and select ROTC cadets with a taste of the operational Air and Space Forces before choosing what could become a life-long career. The Air Force Academy is also creating the Space Force Azimuth officer selection program, further ensuring the right talent gets to the right service.<sup>49</sup> Ultimately, producing space-minded Air Force

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44. Leslie Heck, “AFRL Promotes ‘One Lab, Two Services’ at Space Symposium,” Air Force Research Laboratory Public Affairs, September 9, 2021, <https://www.afrl.af.mil/>.

45. Shaun Waterman, “Air Force Research Laboratory Will Realign, Not Split,” *Air Force Magazine*, August 3, 2020, <https://www.airforcemag.com/>.

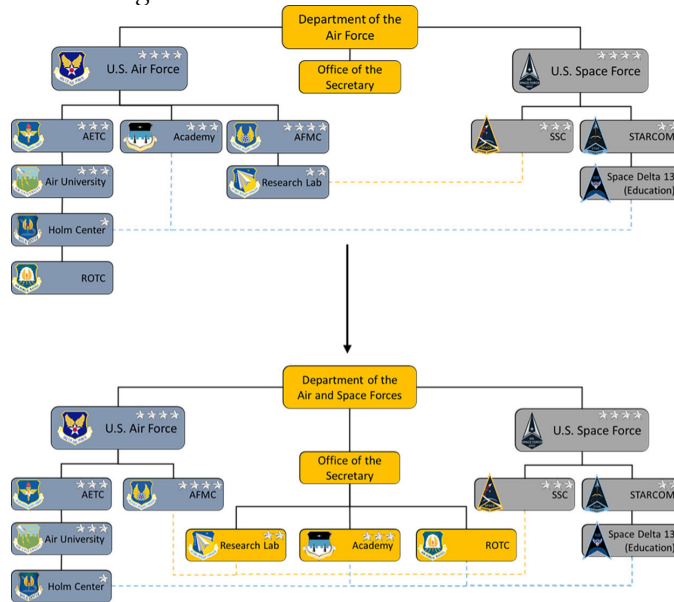
46. “Office of Naval Research Home Page,” Office of Naval Research (website), accessed November 9, 2021, <https://www.onr.navy.mil/>.

47. “World’s First Astronautics Department Celebrates 50 Years,” Air Force Public Affairs, March 7, 2008, <https://www.af.mil/>; and Rachel S. Cohen, “Air Force Academy Looks to Become a Place for Space,” *Air Force Magazine*, November 25, 2020, <https://www.airforcemag.com/>.

48. “About,” Naval Reserve Officer Training Corps (website), n.d., accessed November 9, 2021, <https://www.netc.navy.mil/>; and “About USNA,” US Naval Academy (website), n.d., accessed November 9, 2021, <https://www.usna.edu/>.

49. Cohen, “Place for Space.”

officers and air-minded Space Force officers builds the foundational joint mindset required to win the future fight.



**Figure 2. Current alignment (top) and proposed alignment (bottom) of joint Air and Space Forces functions.**

Note that dashed lines indicate a coordinative relationship between joint and service elements (gold for research and development, blue for officer commissioning).

The natural synergies and air- and space-minded leadership across AFRL, the Academy, and ROTC help ensure a unity of effort between the Air and Space Forces. But as shown in fig. 2, unity of command is fractured as these organizations all reside within the US Air Force. The Air Force Academy is a direct reporting unit to the Chief of Staff of the Air Force, and the Air Force Research Laboratory is one of Air Force Materiel Command’s six centers. The ROTC program is part of Air University’s Holm Center—itself a component of the larger Air Education and Training Command.<sup>50</sup> The Space Force is represented at the Air Force Research Laboratory through Space Systems Command, and it coordinates with ROTC and the Air Force Academy through Space Training and Readiness Command’s Space Delta 13 (Education).<sup>51</sup>

50. “Units,” Air Force Materiel Command (website) n.d., accessed November 9, 2021, <https://www.afmc.af.mil/>; “Holm Center,” Air University (website) n.d., accessed November 9, 2021, <https://www.airuniversity.af.edu/>; and “2021 USAF & USSF Almanac: FOAs, DRUs, and Civil Air Patrol,” *Air Force Magazine*, June 30, 2020, <https://www.airforcemag.com/>.

51. “About Space Systems Command,” Space Systems Command (website), n.d., accessed November 9, 2021, <https://www.ssc.spaceforce.mil/>; and “Space Delta 13 Activates to Lead STARCOM Education and Accessions,” Air University Public Affairs, September 14, 2021, <https://www.maxwell.af.mil/>.

Ultimately, there is a risk that organizations jointly shared by the Air and Space Forces will inherently favor the Air Force so long as they are an integral element of the air service and if focus on space is lost over time.<sup>52</sup> Ensuring this scenario never materializes requires a unity of command outside the traditional Air Force service chain of command. To provide this, the Air Force Academy, ROTC, and AFRL should be realigned from the US Air Force to the Office of the Secretary of the Air Force. Such organizational alignment has already been demonstrated to work, with the Office of Naval Research not situated as a part of the US Navy but instead as a component of the Department of the Navy reporting to the Assistant Secretary of the Navy for Research, Development, and Acquisition.<sup>53</sup>

Similarly, the Department of the Air Force Rapid Capabilities Office is accountable to a joint DAF-Defense Department board of directors that includes the Air Force and Space Force service chiefs.<sup>54</sup> Ultimately, either organizational construct preserves a unity of effort between the Air and Space Forces while ensuring unity of command at the departmental echelon.

## The NASA Model

The Department of the Air Force is not the first organization to undergo a change from an air entity to an air and space entity. It can look to the past for inspiration, taking note of successes and failures. No organization has managed this evolution as well as NASA, the closest civil counterpart to the Department of the Air Force. Like the DAF, NASA began as an exclusively air-focused organization. Established in 1915 as the National Advisory Committee for Aeronautics, the research agency was charged with advancing American aviation in the face of European technological superiority. The agency quickly began cooperating with the Army Air Service, building a relationship that has endured between NASA and the Air and Space Forces to this day.<sup>55</sup>

While NACA's charter did not specifically include a provision for rocketry and space research, it advanced into space regardless, much like the Air Force. Under the leadership of former Air Force General James H. Doolittle, NACA developed a comprehensive aeronautics and space program, including plans for human spaceflight and a worldwide space tracking system.<sup>56</sup> By 1957, a full third of NACA's research was focused on space, making it the obvious choice to reorganize into NASA the following year.<sup>57</sup>

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52. Shaun Waterman, "Space Force 'Very Happy' with Air Force Research Lab Realignment," *Air Force Magazine*, October 27, 2021, <https://www.airforcemag.com/>.

53. "About ONR," Office of Naval Research (website), n.d., accessed November 9, 2021, <https://www.onr.navy.mil/>.

54. "Rapid Capabilities Office," US Air Force (website), n.d., accessed November 2020, <https://www.af.mil/>.

55. Robert E. Bilstein, *Orders of Magnitude: A History of the NACA and NASA, 1915–1990* (Washington, DC: NASA, Office of Management, Scientific and Technical Information Division, 1989), chap. 1, <https://history.nasa.gov/>.

56. Bilstein, *Orders of Magnitude*, chap. 3.

57. T. A. Heppenheimer, *Countdown: A History of Space Flight* (New York: Wiley, 1999), 156.

Although most famous for its space accomplishments, NASA still maintains a robust aeronautics program and has a dual mandate for space *and* aeronautics research. It led the development of fly-by-wire and winglet technology while also conducting cutting edge flight test programs such as the joint USAF-NASA X-15, the swept-wing X-29, and the XV-15 tiltrotor demonstrator.<sup>58</sup> The agency is developing the X-59 to test quiet supersonic flight, conceptualizing new vertical lift technology, and working to return American astronauts to the Moon.<sup>59</sup> NASA has achieved these successes in air and space through treating each as a distinct domain, organizing and budgeting them as such.<sup>60</sup> The DAF should follow this synergistic model.

## Conclusion

Secretary Kendall has described the Air and Space Forces as “one team” within the DAF, dedicated to “one fight.”<sup>61</sup> The Space Force’s independence is a necessary evolution, driving the development of military spacepower while permanently ending the scarring legacy aerospace power integration had on Air Force Space Command. But while space forces may operate in a vacuum, the Space Force cannot—especially in an era that Joint All-Domain Operations will define. Being built upon the hard-fought successes of the Air Force and Marine Corps ensures the US Space Force will not require a separate Department of the Space Force.

Instead, it can develop a united front with the Air Force—equal partners in air and space. Evolving into the Department of the Air and Space Forces sends an unequivocal message that the United States places the relative importance of the Space Force and space domain as equal to the Army and land domain, the Naval Service and maritime domain, and the Air Force and air domain. ✈️

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58. Bilstein, *Orders of Magnitude*, chaps. 7–8; and “Aeronautics,” NASA (website), n.d., accessed November 9, 2021, <https://www.nasa.gov/>.

59. J. D. Harrington, “NASA’s X-59 Quiet Supersonic Research Aircraft Cleared for Final Assembly,” NASA Public Affairs, December 19, 2019, <https://techxplore.com/>; and Harrington, “NASA Renews Support of Vertical Lift Research Centers of Excellence,” NASA Public Affairs, August 11, 2021, <https://www.nasa.gov/>.

60. Lambeth, *High Ground*, 129.

61. Kendall, “State of the Forces.”

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